

WE CLAIM:

1. A method of sending a payload from an Inquisitor Station to a network of Inquisitee Stations, comprising the steps of:

(a) ascribing to each Inquisitee Station, a set of Contextual Variables and its Contextual Values therefor, to form that Inquisitee Station's Contextual Attributes;

10 (b) forming the sought identity of a Inquisitee Station to receive the payload, said sought identity being a function of appropriate values for said Contextual Variables;

(c) Inquisitor Station sending to all Inquisitee Stations, a CAS message having (i) the payload and (ii) said sought identity; and

(d) each Inquisitee Station determining, upon receipt of said CAS message, if it has, based on its Contextual Attributes, said sought identity, and thereupon processing the payload if it has said identity.

20 2. The method of claim 1, wherein said Inquisitor Station is agnostic about the logical links, if any, between it and said Inquisitee Stations having the sought identity, for the purposes of said CAS message.

3. The method of claims 1-2, wherein said Inquisitee Station, in performing "step (d) determining", uses said function on its said Contextual Attributes and compares result with said sought identity.

4. The method of claims 1-3 wherein "step (b) function" uses: (i) said sought C values for said Contextual Variables and (ii) one of {Boolean, linear, non-linear and fuzzy} logic.

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5. The method of claims 1-4, wherein "step (a) ascribing" is Business-motivated.

7. The method of claims 1-5, wherein “step (a) ascribing” is Manufacturer-motivated.

8. The method of claims 1-5, wherein “step (a) ascribing” is implemented by interaction with the Inquisitee Station’s environment.

9. The method of claim 8, wherein said environment includes an aspect of the physical environment, and said Inquisitee Station is equipped to measure said aspect of physical environment and said interaction includes measuring said aspect.

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10. The method of claim 8, wherein said environment includes information related to another Inquisitee Station and the interaction includes coordinating (time) therewith.

11. The method of claims 1-7, wherein “step (b) developing of sought identity” is Business-motivated.

9. The method of claims 1-8, wherein “step (c) sending” is a broadcast of a single CAS message to all Inquisitee Stations.

20 10. The method of claims 1-9, further comprising a communication proxy, wherein “step (c) sending” uses said communication proxy.

11. The method of claims 1-10, wherein the network operates on a conventional protocol contemplating multicasting and “step (c) sending” is a multicast of said CAS message.

12 The method of claim 1-11, wherein the network is organized according to the topology of a tree and the Inquisitor Station is at the root of the tree and the Inquisitee Stations are at the branches of the tree.

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13. The method of claim 1-11, wherein the network is organized according to the

topology of a ring.

14. The method of claim 1-11, wherein the network is organized according to the topology of a common bus shared among the Inquisitor Station and the Inquisitee Stations.

15. The method of claims 1-14, wherein “step (c) sending” is implemented by wireless RF technology.

10 16. The method of claims 1-15, wherein said “step (d) determining” is performed approximately simultaneously.

17. The method of claims 1-16, wherein “step (c) sending” is implemented by: (i) a first communications protocol used between the Inquisitor Station and said communication proxy and (ii) a second communications protocol used between said communication proxy and said Inquisitee Stations.

18. The method of claim 17, wherein said first communications protocol is a RF narrow band technology.

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19. The method of claim 17, wherein said second communications protocol is RF spread spectrum technology.

20. The method of claims 1-19, wherein each Inquisitee Station includes Interaction Module.

21. The method of claims 1-20, wherein one said Contextual Variable is controllable by the business operating the Inquisitee Station (“Business Contextual Variable”).

30 22. The method of claims 1-21, wherein said Business Contextual Variable relates to the user of the Inquisitee Station’s Interaction Module (e.g. billing plan, ownership).

23. The method of claims 1-22, wherein said Business Contextual Variable relates to a metric measured by the Inquisitee Station's Interaction Module (e.g. voltage levels).

24. The method of claims 1-23, wherein said Business Contextual Variable relates to the network environment of the Inquisitee Station's Interaction Module.

25. The method of claims 1-24, wherein said Business Contextual Variable relates to time obtained from elsewhere in the network.

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26. The method of claims 1-25, wherein one said Contextual Variable is exclusively controllable by the Manufacturer of the network devices ("Manufacturer Property").

27. The method of claims 1-26, wherein said Manufacturer Property relates to infrastructure aspects of the Inquisitee Station (e.g. firm ware version, hardware version, Network ID).

28. The method of claims 1-27, wherein "step (d) processing" of payload, is performed immediately upon Inquisitee Station determining that it has the sought identity.

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29. The method of claims 1-28, wherein "step (d) determining", is performed after a Business-motivated delay.

30. The method of claims 1-29, wherein said Business-motivated delay is expressed by the received CAS message (e.g. Contextual Variable with desired value therefor).

31. The method of claims 1-30, wherein among the Inquisitee Stations, there is a fuller functional Inquisitee Station and a lesser functional Inquisitee Station, and said fuller functional Inquisitee Station provides a service to the lesser functional Inquisitee Station so that the output of said lesser functional Inquisitee Station approximates that of a fuller

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functional Inquisitee Stations from the point of view of the remainder of the network.

32. The method of claims 1-31, wherein said lesser functional Inquisitee Station is equipped to send a (non-Contextual) message but cannot receive a (non-Contextual) message.

33. The method of claims 1-32, wherein said lesser functional Inquisitee Station has a clock that cannot be coordinated with a clock employed elsewhere in the network.

10 34. The method of claims 1-33, wherein said fuller functional Inquisitee Station has a battery back-up and said lesser functional Inquisitee Station does not.

35. The method of claims 1-34, wherein said lesser functional Inquisitee Station inherits a Contextual Attribute from its custodial, fuller functional Inquisitee Station.

36. The method of claims 1-35, wherein one Inquisitee Station is supported by two businesses and has Business Contextual Attributes for each said businesses respectively manipulable by each said business.

20 37. The method of claims 1-36, wherein said CAS message is implemented at one layer when viewed relative to the OSI frame of reference.

38. The method of claims 1-37, wherein said CAS message is implemented partially at a first layer and partially at a second layer, when viewed relative to the OSI frame of reference.

39. The method of claims 1-38, wherein the function of the CAS message operating on a Inquisitee Station's Contextual Attributes, forms the Contextual Address for that Inquisitee Station for that instant in time.

40. The method of claims 1-39, wherein a Inquisitee Station forms a plurality of Contextual Addresses in response to the receipt of a plurality of CAS messages.

100. A method of creating multi-dimensional identities for a network of stations, comprising the steps of:

(a) ascribing to each station, its own Contextual Attributes;

10 (b) sending a function to each station that is operable on each station's Contextual Attributes; and

(c) each station receiving said function and determining its identity by using said function on its Contextual Attributes.

101. The method of claim 100, wherein "step (b) function" uses one of {Boolean, linear, non-linear and fuzzy} logic.

102. The method of claims 100-101, wherein "step (b) function" is Business-
20 motivated.

103. The method of claims 100-102, wherein said sending step is a broadcast of a single function to all stations.

104. The method of claims 100-103, further comprising a communication proxy, wherein said sending step uses said communication proxy.

105. The method of claims 100-104, wherein the network operates on IP protocol and "step (c) sending" is a multicast using IP protocol.

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106. The method of claims 100-105, wherein the network is organized according to the

topology of a tree and the station that is sending the function, is at the root of the tree and the other stations are at the branches of the tree.

107. The method of claims 100-106, wherein the network is organized according to the topology of a ring.

108. The method of claims 100-107, wherein the network is organized according to the topology of a common bus shared among the stations.

10 109. The method of claims 100-108, wherein said sending step is implemented by wireless RF technology.

110. The method of claim 104, wherein said sending step is implemented by: (i) a first communications protocol used between the Inquisitor Station and said communication proxy and (ii) a second communications protocol used between said communication proxy and said receiving stations.

112. The method of claims 100-111, wherein each receiving station includes Interaction Module.

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113. The method of claims 100-112, wherein one said Contextual Variable is Business-motivated ("Business Contextual Variable").

114. The method of claims 100-113, wherein said Business Contextual Variable relates to the user of the Inquisitee Station's Interaction Module (e.g. billing plan, ownership).

115. The method of claims 100-114, wherein said Business Contextual Variable relates to a metric measured by the Inquisitee Station's Interaction Module (e.g. voltage levels).

30 116. The method of claims 100-115, wherein said Business Contextual Variable relates to the network environment of the Inquisitee Station's Interaction Module.

117. The method of claims 100-116, wherein said Business Contextual Variable relates to time obtained from elsewhere in the network.

118. The method of claims 100-117, wherein one said Contextual Variable is Manufacturer-motivated (“Manufacturer Property”).

119. The method of claims 100-118, wherein said Manufacturer Property relates to infrastructure aspects of the receiving station (e.g. firmware version, hardware version,
10 Device Type, “network ID”).

120. The method of claims 100-119, wherein “step (d) processing” of payload, is performed immediately upon receiving station determining that it has the sought identity (“thereupon”)

121. The method of claims 100-120, wherein “step (d) determining”, is performed after a Business-motivated delay.

122. The method of claims 100-121, wherein said Business-motivated delay is expressed
20 by the received CAS message (e.g. Contextual Variable with desired value therefor).

123. The method of claims 100-122, wherein among the receiving stations, there is a fuller functional receiving station and a lesser functional receiving station, wherein said fuller functional receiving station provides a service to the lesser functional receiving station so that the output of said lesser functional receiving station approximates that a fuller functional receiving stations from the point of view of the remainder of the network.

124. The method of claims 100-123, wherein said lesser functional receiving station is
30 equipped to send a (non-Contextual) message but cannot receive a (non-Contextual) message.

125. The method of claims 100-124, wherein said lesser functional receiving station has a clock that cannot be coordinated with a clock employed elsewhere in the network.

126. The method of claims 100-125, wherein said lesser functional receiving station inherits a Contextual Attribute from its custodial, fuller functional receiving station.

127. The method of claims 100-126, wherein one receiving station is supported by two businesses and has Business Contextual Attributes for each said businesses respectively
10 manipulable by each said business.

128. The method of claims 100-127, wherein said CAS message is implemented at one layer when viewed relative to the OSI frame of reference.

129. The method of claims 100-128, wherein said CAS message is implemented partially at a first layer and partially at a second layer, when viewed relative to the OSI frame of reference.

20 1000. A method of achieving a desired complex action on an operating environment, comprising:

(a) establishing a communications network having a Base Station and a plurality of endpoints, each endpoint engaging interaction means for interacting with the operating environment and each endpoint having identity-creating means for creating its identity;

(b) developing a desired complex action in terms of individual actions by relevant interaction means;

(c) sending to all endpoints, a message that is an expression of the desired complex action whereby the identities of the relevant said interaction means, are derived (i) by each endpoint's said identity-creating means (ii) from said expressed desired complex
30 action.

1001. The method of claim 1000, wherein each said endpoint has action-deriving means for deriving its appropriate individual action to perform as part of the desired complex action, and said appropriate individual action to perform, is derived (i) by each relevant endpoint (ii) from said expressed desired complex action.

1002. The method of claim 1001, wherein said identity creation is performed by an endpoint upon its receipt of said message.

1003. The method of claims 1000-1002, wherein said individual action derivation is
10 performed by an endpoint upon its receipt of said message.

1004. The method of claims 1000-1003, wherein said step of developing a desired complex action includes developing a plurality of Contextual Variables and a Contextual Function operative on said Contextual Variables, that assist in identifying the said relevant endpoints for the desired complex action.

1005. The method of claims 1000-1004, wherein said message has said Contextual Function, and said endpoint's identity-creating means has its Contextual Values ascribed for said Contextual Variables for form its Contextual Attributes, and each said endpoint
20 uses received message's Contextual Function on its Contextual Attributes to create its identity.

1006. The method of claims 1000-1005, wherein said Contextual Function also has a sought identity and said endpoint determines if its created identity matches the received message's Contextual Function's sought identity.

1007. The method of claims 1000-1006, wherein said interaction means includes a sensor for measuring a physical aspect of the operating environment.

30 1008. The method of claims 1000-1007, wherein said interaction means includes an effector for affecting a physical aspect of the operating environment.

1009. The method of claims 1000-1008, where one Contextual Variable is business-motivated (Business Contextual Attributes).

1010. The method of claims 1000-1009, wherein one Contextual Variable is manufacturer-motivated (Manufacturer Properties).

1011. The method of claims 1000-1010, further comprising the step of ascribing a Contextual Value to said Business Contextual Variable of an endpoint.

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1012. The method of claims 1000-1011, further comprising the step of ascribing a Contextual Value to said Manufacturer Properties of an endpoint.

1013. The method of claims 1000-1012, wherein step of ascribing is implemented by the interaction of the endpoint's interaction means with the operating environment.

1014. The method of claims 1000-1013, wherein step of ascribing is implemented by the interaction of the endpoint's interaction means with its network environment.

20 1015. The method of claims 1000-1014, wherein the operating environment is dynamic with the passage of time, and so potential identities that can be created, accordingly change with the passage of time.

1016. The method of claims 1000-1015, wherein one Contextual Variable relates to exogenous or endogenous aspects.

1017. The method of claims 1000-1016, wherein a Contextual Variable relates to time.

30 1018. The method of claims 1000-1017, wherein said network environment includes time of another station, and includes coordinating time therewith.

1019. The method of claim 1000-1018, wherein said another station is the Base Station which keeps network time.

1020. The method of claims 1000-1019, wherein said message has a payload and upon the match of sought identity and endpoint's created identity, said endpoint processes said payload.

1021. The method of claims 1000-1020, wherein said payload is instructions for the sensor to sense.

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1022. The method of claims 1000-1021, wherein said payload is instructions for the effector to do a prescribed individual action or cease to do a prescribed individual action that affects the operating environment.

1023. The method of claims 1000-1022, wherein said payload is instructions to change a specified Contextual Value.

1024. The method of claims 1000-1023, wherein said payload is instructions to delete a specified Contextual Variable.

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1025. The method of claims 1000-1024, wherein said payload is instructions to add a specified Contextual Variable.

1026. The method of claims 1000-1025, wherein said payload includes a self-executing function for the station to activate.

1027. The method of claims 1000-1026, wherein said step of sending a message, uses a communication proxy.

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1028. The method of claims 1000-1027, wherein said message is sent by the Base Station in a first protocol and the message is received by all endpoints in a second

protocol and said communication proxy serves as a protocol converter for converting between said protocols.

1029. The method of claims 1000-1028, wherein said payload function is one of {Boolean, linear/non-linear, etc.}

1030. The method of claims 1000-1029, wherein the operating environment includes an electric power grid and said physical aspect relates to electricity on the grid line that said interaction means is attached to.

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1031. The method of claims 1000-1030, wherein said aspect is related to electricity voltage.

1032. The method of claims 1000-1031, wherein said aspect is related to electricity current.

1033. The method of claims 1000-1032, wherein said aspect is related to electricity phase.

20 1034. The method of claims 1000-1033, wherein said effector is a remote disconnect switch.

1035. The method of claims 1000-1034, wherein said step of sending a message is the one time sending of a single message.

1036. The method of claims 1000-1035, wherein said identity/action creation is performed after a (prescribed) postponement after its receipt of said message.

30 1037. The method of claims 1000-1036, further comprising a traditional addressing scheme to send a message between endpoints and Base Station.

1038. The method of claims 1000-1037, wherein said Contextual Function has one of {Boolean, linear, non-linear and fuzzy} logic.

1039. The method of claims 1000-1038, wherein the operating environment includes a physical consumable commodity that is consumable (e.g. water, gas, items in vending machine, items in a warehouse).

10 2000. A method of homogenizing a network having a first heterogeneous element that produces a first output and a second heterogeneous element that produces a second output, comprising the step of providing a service to the second heterogeneous element to make its said first output appear to be of the same nature as said second output.

2001. The method of claim 2000, wherein first heterogeneous element is a fuller functional station and said second heterogeneous element is a lesser functional station, and said first heterogeneous element provides a service to said second heterogeneous element so that the output of said second heterogeneous element approximates that of a fuller functional stations.

20 2002. The method of 2001, wherein said lesser functional station is equipped to send a CAS message but cannot receive a CAS message.

2003. The method of claims 2000-2002, wherein said fuller functional station is fully time sentient and said lesser functional station is limited time sentient, where fully time sentient means said fuller functional station has a clock that is coordinated with the time of a third station, and said limited functional station has a clock that cannot be so coordinated.

30 2004. The method of claims 2000-2003, wherein said lesser functional station inherits a Contextual Attribute from its custodial, fuller functional station.

2005. The method of claims 2000-2004, wherein fuller functional station has a back-up battery and the lesser functional station does not have a back-up battery.

2006. The method of claims 2000-2005, wherein each station is time-sentient.

2007. The method of claims 2000-2006, wherein the time-sentience of one station means that it has an internal counter that does not coordinate with the time outside the station, and the time-sentience of a second station means that it has an internal counter that does coordinate with time outside itself.

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3000. A method of "Plug & Play" for associating an un-associated WAN/LAN Device to a network having a Base Station, comprising the steps of:

- (a) the Base Station creating and sending an Association Beacon;
- (b) the un-associated WAN/LAN Device scanning for said Base Station-derived Association Beacons and upon detecting one, sending back a WAN Association Request message.

20 3001. The method of claim 3000, wherein said Association Beacon has a Business ID with a list of time slots during which said WAN Association Request can be sent back.

3002. The method of claim 3000, wherein the number and duration of time slots in said list, is dynamically determined, based on past experience (e.g. as function of traffic, dropped communications links).

30 4000. A method of "Plug & Play" for associating an un-associated LAN Device to a network having one or more associated LAN Devices, one of which is attached to a WAN portal to a Base Station-centric WAN, comprising the steps of:

- (a) each associated LAN Device sending Association Beacons;
- (b) the un-associated LAN Device scanning for said LAN Device-derived Association Beacons and selecting the best associated LAN Device to associate with;
- (c) the un-associated LAN Device sending a LAN Association Request to said selected best associated LAN Device.

10 4001. The method of claim 4000, wherein said selecting step is based on consideration of received communications quality characteristics from LAN Association Beacons from each said associated LAN Devices.

4002. The method of claims 4000- 4001, wherein each associated LAN Devices has a resource metric indicative of its ability to handle more communication traffic, and said selecting step is based on said resource metric.

4003. The method of claims 4000- 4002, wherein said resource metric includes a factor among {the number of LAN Devices it is routing for, its distance from its WAN Portal}.

20 4004. The method of claims 4000- 4003, where the intelligence for selecting which LAN Device to associate with, is mainly at the Base Station.

4005. The method of claims 4000- 4004, wherein candidate LAN Devices are provided to the Base Station, each with certain information useful for selecting the best LAN Device, and the Base Station selects.

4006. The method of claims 4000- 4005, where the intelligence for selecting which LAN Device to associate with, is mainly at the un-associated LAN Device.

30 4007. The method of claims 4000-4006, wherein the un-associated LAN Device choses based on immediate physical communication metrics (topological efficiency, resource

indicator metrics).

4008 The method of claims 4000-4007, wherein the only addressing scheme is that of claims 1-129 (i.e. without Traditional Addressing).

5000. The method of claims 1-4008, wherein upon a WAN/LAN Device finding itself in a state of dis-association, comprising the re-performance the steps of association in claim 3000 and following.

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5001. The method of claim 5000, wherein upon a LAN Device finding itself in a state of dis-association, comprising the reperformance of the steps of association in claim 4000 et seq.

5002. The method of claims 1-5001, wherein regulation of access by stations to the communications medium is accomplished by assigning orthogonal channels to each station.

20 5003. The method of claim 5002, where the un-associated LAN Device has a Manufacturer-motivated Operating LAN Communication Channel and sends said LAN Association Beacon thereon.

5004. The method of claim 5003, wherein the plurality of Operating LAN Communication Channels are processed to be orthogonal to each other.

6000. For a network of stations having a Base Station, wherein each station sends messages to the Base Station and the process of sending requires power, and each station has a clock and persistent memory, a method of recovering the state of the network, upon
30 power resumption after a power disturbance, comprising the steps of:

each station, while powered,

- (a) keeps in said memory, a copy of each message after it is sent;
- (b) indicates on that copy its status as being sent;
- (c) time-stamps, based on its clock, each copy with its time of sending
- (d) upon the occurrence of power disturbance and then power resumption, sending to the Base Station, each said sent copy of time-stamped messages

and the Base Station re-assembling the messages in chronological order based on time-stamps of received messages (and deleting duplicates)

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6001. The method of claim 6000, wherein said clock re-starts at the time it had upon power disturbance and continues until it is able to be coordinated with network time.

6002. The method of claims 6000-6001, wherein said clock is coordinated with network time.

6003. The method of claims 6000-6002, wherein, during the process of re-assembling, if the Base Station deduces that a message is missing, querying the relevant station to resend the missing sent messages.

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6004. The method of claims 6000-6003, wherein said step of keeping in said memory is organized in the form of a circular buffer where the oldest message is overwritten by the most recent message sent/to be sent.

7000. The method of the above claims, further comprising reporting by LAN Devices by PQM/AMR reporting (scheduled) or upon an “alarm” condition (unscheduled).

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8000. For a network of stations, a method of effecting a desired complex action by each of a subset of stations, comprising the steps of:

- (a) developing agents that have the functionality for locating each said target station and for effecting desired action;
- (b) distributing said agents to locate the stations of the relevant subset; and
- (c) having those agents who located the subset, to effect the desired action